



HE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s):

Don Butler, et al.

Serial No.:

09/654,938

Filing Date:

May 10, 2000

Title:

Reduced Television Display Flicker And Perceived Line

Structure With Low Horizontal

Scan Rates

Examiner: Victor R. Kostak

Art Unit: 2611

March 21, 2003 San Francisco, California

Commissioner of Patents Washington, DC 20231

SUBMISSION OF FORMAL DRAWINGS

Sir:

Applicants submit herewith fifteen sheets of formal drawings for the allowed U.S. patent application captioned above.

The content of the enclosed formal drawings is identical to the content of the drawings originally filed with the application.

Respectfully submitted,

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Enc.

Certificate of Mailing Under 37 CFR 1.8

I certify that this Submission of Formal Drawings and any enclosed materials are being deposited with the United States Postal Service on March 21, 2003, with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, Box Issue Fee, Washington, DC 20231.

Docket: FAR009





Sheet 1 of 15
"Reduced relevision Display Flicker and Perceived Line Structure with Low Horizontal Scan Rates"

Inventors: Don Butler, et al. S/N: 09/654,938 (FAR009)

Contact: Gallagher & Lathrop 415-989-8080

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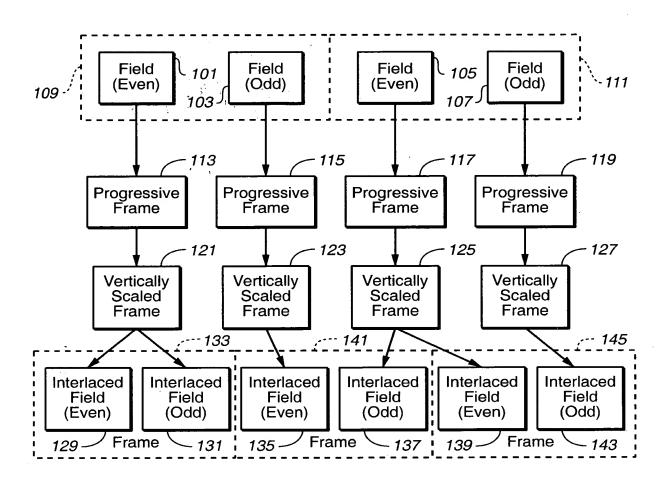


FIG._1



Sheet 2 of 15
"Reduced Television Display Flicker and Perceived Line Structure with Low Horizonta Scan Rates"
Inventors: Don Butler, et al.
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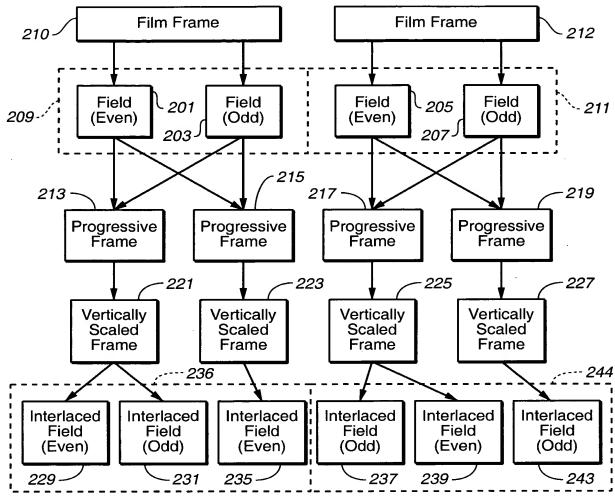
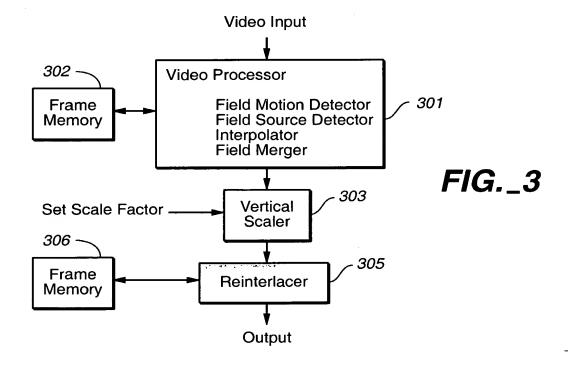


FIG._2





Sheet 3 of 15

"Reduced Television Display Flicker and Perceived Line Structure with Low Horizonta Scan Rates"

Inventors: Don Butler, et al.

S/N: 09/654,938 (FAR009)

Contact: Gallagher & Lathrop 415-989-8080 3/15 One Field Delay Two Field Delay Bo $\mathsf{B}_{\!\scriptscriptstyle \mathsf{O}}$ \mathbf{B}_{e} Ae + Zo, Ae + Aeo Ao + Ae, Ao + Aoe Be + Ao, Be + Beo Bo + Be, Bo + Boe Video Input $\mathbf{B}_{\mathbf{e}}$ Bo Ŷ Ae, / В $\mathbf{B}_{\mathbf{e}}$ Po , Aeo Ae ${\sf B}_{\sf e}$ P Ae

Po

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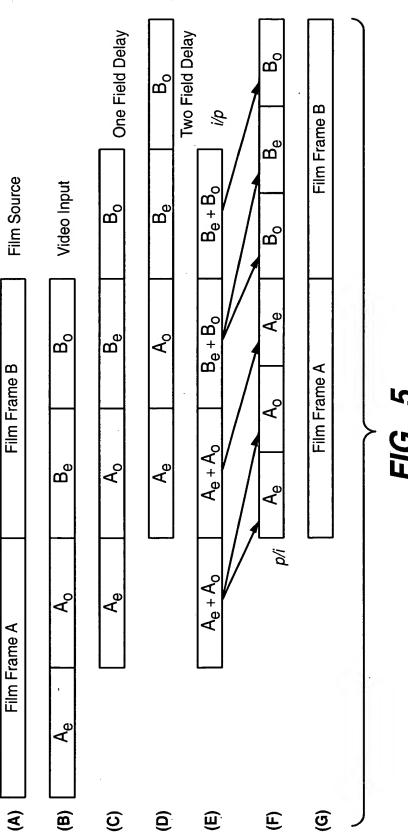
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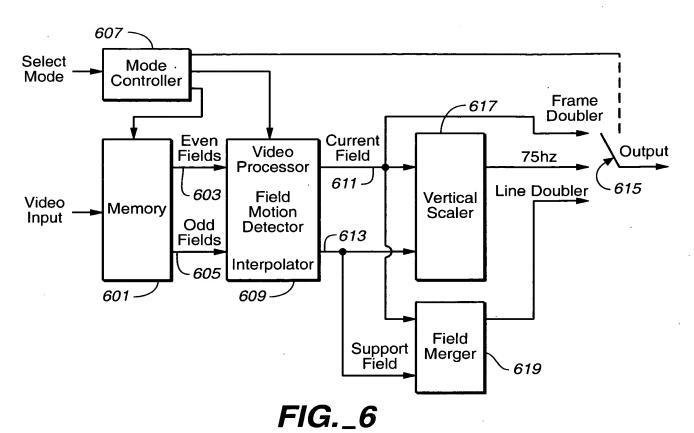
Sheet 4 of 15
"Reduced Television Display Flicker and Perceived Line Structure with Low Horizontal Scan Rates"
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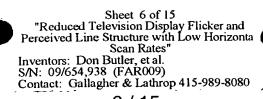


Sheet 5 of 15
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| Video Input | Stream 603 | Stream 605 | Current Field (no motion) | Support Field (no motion) | Current Field (full motion) | Support Field (full motion) | Current Field (mixed motion) | Support Field (mixed motion) | , |
|----------------|----------------|----------------|---------------------------|---------------------------|-----------------------------|-----------------------------|------------------------------|----------------------------------|-------------------|
| | | ပိ | ပိ | De | တိ | Coe | ပိ | D _e , C _{oe} | |
| | ပီ | ပိ | ပီ | ပိ | ပိ | Ceo | ပီ | Co, Ceo | |
| ပိ | ථ | Во | Bo | ပီ | Во | B _{oe} | Во | C _e ,B _{oe} | r. Mode |
| ပီ | Be | Во | Be | Во | Be | Beo | Be | B _o , B _{eo} | Line Doubler Mode |
| Во | Be | Ao | Ao | Ве | Ao | A _{oe} | Ao | B _e , A _{oe} | |
| Be | Ae | A _o | A _e | Ao | A _e | Aeo | A _e | A _o , A _{eo} | |
| A _o | A _e | | | | | | | | |
| Ae | | | | | | | | | |
| <u>€</u> | (B) | (C) | (<u>0</u> | (E) | (F) | 5 | Ē | € | |



Sheet 7 of 15
"Reduced Television Display Flicker and Perceived Line Structure with Low Horizon Scan Rates"
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Sheet 8 of 15

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| (A | A _e A _o B _e B _o | C _e C _o D _e | Video Input |
|------------|---|--|------------------------------|
| (B) | Ae Ae Be | Be Be Ce Ce Ce | Stream 603 |
| <u>©</u> | Ao Ao Ao | Bo Bo Bo Co Co | Stream 605 |
| (0 | Ae Ao Be | B _o B _e B _o C _e C _o | Current Field (no motion) |
| (E) | Ao Ae Ao | Be Bo Ce Co Ce | Support Field (no motion) |
| (F) | Ae Aeo Aoe | Beo Be Bo Ce Ceo | Current Field (full motion) |
| <u>(5)</u> | Aeo Ae Ao | Be Beo Boe Ceo Ce | Support Field (full motion) |
| Œ | Ae Ao Be Ace Bo Beo | Bobol Be Bo Ce Coco | Current Field (mixed motion) |
| € | AoAgo Ae Ao | Be Bobo CeBo Coco Ce | Support Field (mixed motion) |
| J | 7 | 75 Hz Mode | |



Sheet 9 of 15
"Reduced Television Display Flicker and Perceived Line Structure with Low Horizonta Scan Rates"

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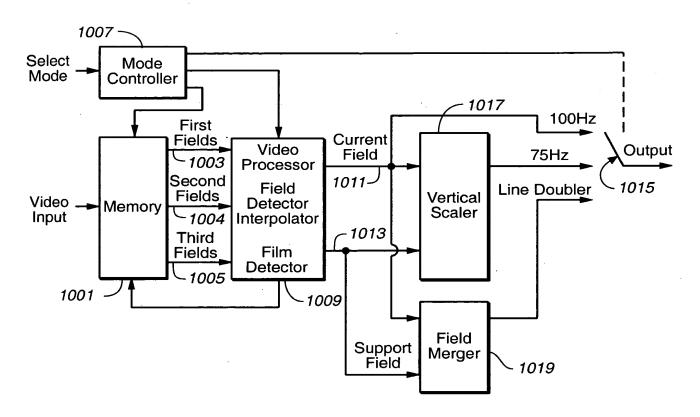


FIG._10



Sheet 10 of 15

"Reduced Television Display Flicker and Perceived Line Structure with Low Horizontal Scan Rates"

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Contact: Gallagher & Lathrop 415-989-8080

| Film Source | Input Video | Stream 1003 | Stream 1004 | Stream 1005 | Current Field 1011 | Support Field 1013 | | | |
|----------------------|---|---|---|---|---|---|------------------------|---------------------------------------|---|
| Film A Film B Film C | A _e A _o B _e B _o C _e C _o | A _e A _e B _e B _e C _e C _e | A _o A _o B _o B _o C _o C _o | A _e A _e B _e B _e C _e C _e | A _e A _o B _e B _o C _e C _o | A _o A _e B _o B _e C _o C _e | Film A Film B Film C | Line Doubler Mode First Film Phase | |
| (A) | <u>(B)</u> | <u>(</u>) | <u>Q</u> | (E) | (F) | 9 | $\widehat{\mathtt{H}}$ | | J |



Sheet 11 of 15
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| (A) (B) (B) (B) (B) (C) (B) (B) (B) (B) (C) (C) (C) (C) (C) (C) (C) (C) (C) (C | Film Source Input Video Stream 1003 Stream 1005 Modified Stream 1005 Current Field 1011 Support Field 1013 |
|--|--|
| 1~1 1-1 1~1 1~1 | |



Sheet 12 of 15
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| | Film A Film B Film C Film D | Film Source |
|---|--|---------------|
| | Ae Ao Be Bo Ce Co De Do | Input Video |
| | AelAelAelBelBelBelCelCelCelDelDe | Stream 1003 |
| | AolAolAolBoBoBoBolColColColCo | Stream 1004 |
| | AeAeAeBeBeBeBeCeCe | Stream 1005 |
| | A _e A _o B _e B _o B _e B _o C _e C _o C _e C _o | Current Field |
| | A _o lA _e lB _o lB _e lB _o lB _e lC _o lC _e lC _o lC _e | Support Field |
| | Film B Film C | |
| | Frame Doubler Mode First Film Phase | |
| 1 | | |



Sheet 13 of 15

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| Film Source | Input Video | Stream 1003 | Stream 1004 | Stream 1005 | Modified Stream 1005 | Current Field | Support Field | | |
|---------------|-------------------|----------------------------|----------------------|----------------------|-------------------------|--|------------------|---------------|---|
| Film A Film B | Ae Ao Be Bo Ce Co | Ae Ae Ae Be Be Be Be Ce Ce | Ao Ao Ao Bo Bo Bo Bo | Ae Ae Ae Be Be Be Be | Ao Ao Ao Ao Bo Bo Bo Bo | A _o B _e A _o B _e B _o C _e B _o C _e | AeBoAeBoBeCoBeCo | Film A Film B | Frame Doubler Mode Second Film Phase |
| (A) | (B) | (C) | (<u>Q</u>) | (E) | (F) | (5) | Đ | € | J |



Sheet 14 of 15
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Sheet 15 of 15
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| Film Source | Input Video | Stream 1003 | Stream 1004 | Stream 1005 | Modified Stream 1005 | Current Field | Support Field | | | |
|----------------------|-------------------------|---------------------------------------|----------------------------|---|----------------------|--|----------------------|---------------|---------------------------------|--|
| Film A Film B Film C | Ae Ao Be Bo Ce Co De Do | $A_e A_e B_e B_e B_e C_e C_e C_e D_e$ | Ao Ao Ao Bo Bo Bo Co Co Co | $A_{e} A_{e} A_{e} B_{e} B_{e} B_{e} C_{e} C_{e}$ | Ao Ao Bo Bo Bo Co | A _o B _e A _o C _e B _o C _e C _o | Be Ao Be Bo Ce Bo De | Film A Film B | /o hz Mode Second Film Phase | |
| (A) | (B) | <u>©</u> | (Q) | (E) | (F) | (5) | Œ | (| _ | |